D.T.E. 98-90

Investigation by the Department of Telecommunications and Energy of Colonial Gas Company's Long-Range Forecast and Resource Plan for the Split Years 1998-1999 Through 2002-2003, filed pursuant to G.L. c. 164 §§ 69I et seq. and 980 C.M.R. § 7.00 et seq.

APPEARANCES: Bruce B. Glendenning, Esq.

Colonial Gas Company

40 Market Street

Lowell, MA 01852

Petitioner

-and-

Stephen H. August, Esq.

Cheryl M. Kimball, Esq.

Keegan, Werlin & Pabian, LLP

21 Custom House Street

Boston, MA 02110

FOR: Colonial Gas Company

TABLE OF CONTENTS

I. INTRODUCTION

On September 1, 1998, pursuant to G.L. c. 164, § 69I et seq., Colonial Gas Company ("Colonial" or "Company") filed with the Department of Telecommunications and Energy[(1)] ("Department") a petition for approval of its long-range forecast and resource plan for the split years[(2)] 1998-1999 through 2002-2003. The petition was docketed as D.T.E. 98-90.[(3)]

Colonial is primarily a regulated natural gas distribution utility headquartered in Lowell, Massachusetts. The Company serves utility customers in 24 Massachusetts municipalities

located northwest of Boston ("Lowell Division") and on Cape Cod ("Cape Cod Division"). The Company's combined natural gas distribution service areas cover approximately 622 square miles. Of its over 150,000 customers, approximately 90 percent are residential accounts.

Pursuant to notice duly issued, the Department conducted a public hearing and procedural conference on May 6, 1999. No petitions to intervene were filed.

Pursuant to notice duly issued, an evidentiary hearing was held at the Department's offices on August 5, 1999. Colonial sponsored the testimony of three witnesses: Nancy G. Culliford, manager of portfolio planning and operations; A. Leo Silvestrini, director of gas resource planning for Boston Gas Company; and, Theodore E. Poe, Jr., senior resource planning consultant with Boston Gas Company. The evidentiary record includes one Company exhibit with two corrections incorporated therein, 32 Department exhibits, three Company responses to record requests, and one Company response to a supplemental record request. On September 10, 1999, the Company also filed a brief supporting its petition.

II. ANALYSIS OF THE LONG-RANGE FORECAST

A. Standard of Review

Pursuant to G.L. c. 164, § 69I, the Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." In accordance with this mandate, the Department reviews the long range forecast of each gas utility to ensure that the forecast accurately projects the gas sendout requirements of the utility's market area. G.L. c. 164, § 69I. A forecast must reflect accurate and complete historical data, and reasonable statistical projection methods. G.L. c. 164,

§ 69I; 980 C.M.R. § 7.02 (9)(b). Such a forecast should provide a sound basis for resource planning decisions. Colonial Gas Company, D.P.U. 96-18, at 4 (1996); Bay State Gas Company, D.P.U. 93-129, at 5 (1996); Holyoke Gas and Electric Department, D.P.U. 93-191, at 2 (1996); Berkshire Gas Company, 16 DOMSC 53, at 56 (1987).

In its review of a forecast, the Department determines if a projection method is reasonable based on whether the methodology is: (a) reviewable, that is, contains enough information to allow a full understanding of the forecast methodology; (b) appropriate, that is, technically suitable to the size and nature of the particular gas company; and (c) reliable, that is, provides a measure of confidence that the gas company's assumptions, judgments, and data will forecast what is most likely to occur. D.P.U. 96-18, at 5; D.P.U. 93-129, at 5; D.P.U. 93-191, at 2; Haverhill Gas Company, 8 DOMSC 48, at 50-51 (1982). Specifically, the Department examines a gas company's (1) planning standards, including its weather data; (2) forecast method, including the forecast results; and (3) derivation and results of its design and normal sendout forecasts. See D.P.U. 96-18, at 5; D.P.U. 93-129, at 5-6; D.P.U. 93-13, at 6; see also, Boston Gas Company,

D.P.U. 94-109 (Phase I), at 9 (1996). As part of the review of the forecast, the Department also examines the company's scenario analysis, which is used for evaluating the flexibility of the company's planning process, including any cold-snap analysis[(4)] and sensitivity analysis. Boston Gas Company, 25 DOMSC 116, at 200 (1992) ("1992 Boston Gas Decision"); see D.P.U. 93-129, at 23-25 and D.P.U. 94-109 (Phase I), at 61-66.

B. Previous Sendout Forecast Review

In Colonial Gas Company, D.P.U. 96-18, at 29 (1996) ("1996 Colonial Gas Decision"), the Department approved Colonial's sendout forecast. However, in order to approve Colonial's next forecast and supply plan filing, the Department directed the Company to:

(1) justify its design-year standard and:

(a) to compare its design-year standard to that of similar utilities in the northeastern United States and discuss the reasons for any differences;

(b) to address the weaknesses in its model for the cost of unsupplied demand or develop another cost/benefit method;

(c) to take into account the costs and benefits to its customers of maintaining different levels of reliability; and

(d) to evaluate and discuss options it would pursue to mitigate the consequences of unsupplied demand;

(2) justify its design-day standard and:

(a) to compare its design-day standard to that of similar utilities in the northeastern United States and discuss the reasons for any differences;

(b) to take into account the costs and benefits to its customers of maintaining different levels of reliability; and

(c) to evaluate and discuss options it would pursue to meet customers' needs under design-day conditions; and,

(3) identify any additional migration to firm transportation ("FT") service and evaluate how changes in the FT market affect the Company's sendout forecast.

See 1996 Colonial Gas Decision, at 67-68.

Colonial's compliance with the above directives is discussed below.

C. Planning Standards

The first element of the Department's forecast review is an assessment of a company's planning standards in order to determine if they are reviewable, appropriate and reliable. A company's planning standards are used as a basis for projecting its sendout forecast which, in turn, is used for ascertaining the adequacy and cost of a company's supply plan. The Department's review of planning standards begins first with a review of a company's weather data, and continues with an an analysis of the planning standards themselves, e.g., how the company arrived at its: (1) normal-year; (2) design-year; and (3) design-day standards.

1. Weather Data

a. Description

The Company states that it receives its weather data on a daily basis from the Weather Services Corporation, Inc.("WSC") (Exh. CGC-1, at 17). WSC provides degree-day ("DD") weather data for the Company's Lowell Division at Bedford, Massachusetts and effective-degree-day ("EDD") weather data for the Company's Cape Cod Division at Otis Air Force Base on Cape Cod (id. at 18). The Company's weather data base consists of 32 years of historical weather data provided by WSC (id.).

In D.P.U. 96-18, Colonial analyzed the feasibility of using EDD data in its Lowell Division but determined that there is no statistically significant difference between the performance of the two weather data sets (e.g., between DD and EDD) and that the Company would incur additional costs to switch to the use of EDD data for the Lowell Division (Exh. CGC-1, at 18). Consequently, the Company continues to use DD weather data for the Lowell Division and EDD weather data for the Cape Cod Division (id.).

b. Analysis and Findings

Based on the information presented by the Company, the Department concludes that the 32-year weather data base is of an acceptable length of time and appropriate for input into its planning standards. The Department has previously found data bases of similar length to be appropriate. See 1996 Colonial Gas Decision; 1996 Bay State Decision, D.P.U. 93-129. Further, the justification for not converting DD data to EDD data for its Lowell

Division is reasonable. Therefore, the Department concludes that the WSC weather data provides an adequate database from which to develop Colonial's planning standards. Accordingly, the Department finds the weather database used by the Company in this filing is appropriate, reviewable and reliable.

2. Normal-Year Standard[(5)]

a. Description

The Company compiled the normal-year daily temperature data by using the actual daily weather patterns of historical months for which the total degree-days most closely approximate the normal weather (i.e., 20 year average) for that month (Exh. CGC-1, at 19). By combining the daily patterns for these representative months, the Company states that it developed the normal daily weather patterns for the 365 days that best represents the 20-year average (id.). Specifically, Colonial used a normal-year standard of 6,579 DD for the Lowell Division and 6,388 EDD for the Cape Cod Division to develop its sendout forecast (id.).

b. Analysis and Findings

The use of the arithmetic average of historical DD data to establish a normal-year standard has previously been accepted by the Department. 1992 Boston Gas Decision, 25 DOMSC 116, at 136 (1992); 1991 Colonial Gas Decision, 23 DOMSC 351, at 363-364 (1991). Because Colonial bases its normal-year standard on a historical average of actual WSC data and its planning standards on the WSC weather database approved in Section II.C.1.b., above, the Department finds that Colonial's method for determining its normal-year standard is reviewable, appropriate, and reliable.

3. Design-Day Standard[(6)]

a. Description

In making a decision as to the appropriate design standard, the Company used a cost-benefit methodology to derive Colonial's design-year and design-day standards and compared the incremental gas supply reservation costs with the incremental benefits that customers would receive at each level of design standards (Exh. CGC-1, at 20). More precisely, the Company compared incremental shortfall[(7)] costs, which are based on the probabilistic value of customer losses that would be avoided, to the incremental gas supply costs of meeting higher design standards (id.). Once the incremental supply costs and shortfall costs were estimated, the Company indicates that the appropriate design standard in terms of degree-days is determined at the level where the reduction in annual shortfalls costs did not exceed the incremental supply costs (id. at 26).

With regard to the incremental cost of gas resources,[(8)] the Company states that the incremental cost of meeting a higher design-day standard is based on the incremental annual cost to acquire additional capacity (Exh. CGC-1, at 22). Thus, to determine the

incremental cost of gas resources, the Company analyzed the estimated cost of expanding an LNG facility's vaporization capacity, which is the least expensive means of adding peaking capacity (id.).

The Company explained that the estimate of shortfall costs are more difficult to quantify than the incremental supply costs (Exh. CGC-1, at 25). Since the most relevant cost to consider in an analysis of shortfall costs are the costs to be borne by customers, the Company assumed that lost production was the best proxy for the cost of the shortfall and, thus, analyzed a range of estimates for the "lost production multiplier" to measure the amount of lost commercial and industrial business revenues[(9)] in the event of a shortfall (id.). For commercial customers, the output value is the foregone revenue (id.). For the industrial sector, the figures for production multipliers were taken from electricity-using plants since the relationship between energy cost and production value would be similar to gas-using plants (id. at 26). The Company then looked at the relationship between gas costs and the value of a customer's output and performed the multiplier analysis based on a high and a low estimate of the multiplier (id. 25-26). Similar to the research results on production multipliers for electricity-users, the Company used a low multiplier of 30 and a high multiplier of 60 for its analysis (id. at 26).

The Company found that for the Lowell Division, the appropriate design-day standard would be between 70.3 and 71.4 DD, with probabilities ranging from 1:35 to 1:60 years (Exh. CGC-1, at 27). For the Cape Division, the appropriate design-day standard would be between 74 and 75.2 EDD, with probabilities from 1:35 to 1:55 years (Exh. CGC-1, at 27). Since the differences in the design standards for the two divisions are not substantial, the Company decided to establish a single standard for both divisions (id.). Consequently, the Company determined that a design-day standard of 1:50, representing the approximate midpoint of the range of probability values, is a reasonable standard for this filing (id.).

b. Analysis and Findings

In its Gas Generic Order, 14 DOMSC 95, at 97 (1986), the Siting Council notified gas companies that renewed emphasis would be placed on design criteria "to ensure that those criteria bear a reasonable relationship to design conditions that are likely to be encountered." In addition, the Siting Council required each company, in each forecast filing, to include a detailed discussion of: (1) how and why it selected the design weather criteria that it uses, giving particular attention to the frequency with which design conditions are expected to occur; and, (2) the effect of the design standard on the reliability of the company's forecast and cost of its supply plan. Id. at 96-97, 104-105.

Colonial indicated its choice of design-day standard through a cost-benefit analysis. On the cost side, the Company considered the incremental gas supply reservation costs. On the benefit side, Colonial considered the reduction in shortfall costs as the benefit to customers. Thus, the Company compares its own costs to the customers' benefit.

The Department finds the approach taken by the Company in this filing to be appropriate.[(10)] According to this method, once the Company estimated the incremental supply costs (i.e., reservation costs) and shortfall costs (based on the production multiplier approach), the appropriate design-day standard is determined at the level where the reduction in annual shortfall costs equals the incremental supply costs. The Department finds the calculation method and assumptions used by the Company and the Company's method for obtaining its design-day standards to be reviewable and reliable. The Department, however, remains concerned that, in light of the recent changes in the industry, the Company's selected 1:50 design-day standard remains moderately conservative relative to the majority of area LDCs. As the gas commodity marketplace continues to evolve, and resource acquisitions become increasingly more flexible and capable of promoting reliability at a lower cost, such a "supply security" may become detrimental to the captive firm customer.

Given the concern of a high design standard in combination with the developments in the natural gas market, the Department notes that the Company's design-day standard may lead to oversubscribing resources to provide firm customers with a higher-than-desired level of reliability. For the foregoing reasons, the Department finds that the Company's method for determining design-day standard is minimally appropriate. As a requirement for approval of its next Forecast and Supply Plan, the Company must provide comprehensive cost-benefit evaluations and justify the appropriateness of its selected design-day standard in light of the changes that will take place in the gas industry.

4. Design-Year Standard[(11)]

a. Description

The Company utilized a cost-benefit analysis, similar to that used for the design-day analysis, to determine its design-year standard (Exh. CGC-1, at 28). Colonial notes that the cost of meeting higher design-year standards requires increasing the ability to supply gas over a longer period, as opposed to a single day (id.).

In terms of shortfall costs, the Company asserts that there will be a difference in the shortfall cost between a peak-day shortfall and the longer-term interruptions that could occur if the design-year standard were set too low (Exh. CGC-1, at 29). The Company argues that if an interruption lasted for longer than a day or part of a day, or if customers are forewarned that an interruption may last for longer than a day, customers would have an opportunity to react by adjusting production schedules, or by obtaining substitute energy sources, which could allow them to continue operations (id.). Because of the opportunity given to customers to react to the shortfall, Colonial stated that the losses associated with longer-lasting and more predictable interruptions were about half of the losses associated with short-term interruptions on a per unit of energy basis (id.). For this reason, the Company used design-year lost production multipliers that are equal to one-half of the design-day multipliers (id.).

The Company concluded that for the Lowell Division, the appropriate design-year standard would be between 7,046 and 7,118 DD, with probabilities from 1:40 to 1:70 years (Exh. CGC-1, at 30). For the Cape Division, the appropriate design-year standard was taken to be between 7,474 and 7,583 EDD, with probabilities from 1:40 to 1:65 years (id.). Similar to its design-day standard, Colonial determined that the midpoint for design-year standard would be 1:55 (id. at 31). However, unlike a design-day shortfall, the Company states that if more severe weather occurs, the Company will have more lead-time to acquire additional resources on a short-term basis; hence, the Company believes that the selection of a design-year standard can be less conservative than the value represented by the midpoint of the range (id.). Thus, following this assumption, the Company selected 1:50 as its design-year planning standard (id.).

b. Analysis and Findings

The Company's cost-benefit method for calculating design-year is similar to the one used in its design-day calculation and the Department finds that Colonial has described the justification for the method used for its design-day standard sufficiently. However, as stated in Section II.C.3.b., above, an overly conservative design planning standard in an increasingly competitive environment may result in a costly and non-competitive commodity portfolio.

The Department finds that the Company's method for determining design-year standard is reviewable, reliable, but only minimally appropriate. Accordingly, the Department directs the Company, in its next Forecast and Supply Plan filing, to continue to provide comprehensive cost-benefit evaluations to justify the appropriateness of its selected design-year standard in light of the changes that are taking place in the gas industry.

5. Cold-Snap Standard

The Company utilized its previous cold-snap planning standard that was approved by the Department in D.P.U. 96-18, at 48 and Colonial Gas Company, D.P.U. 93-13, at 68 (1995). The Company incorporated the assumptions contained in the cold-snap standard into its SENDOUT[12] model (Exh. CGC-1, at 32). The Department notes that the conditions leading to the prior approval of the Company's cold-snap standard have not changed since Colonial's last forecast and supply plan. Thus, the Department finds that the Company's method for determining its cold-snap standard is reviewable, appropriate and reliable.

6. Conclusions on Planning Standards

The Department finds that the Company provided a reliable weather database for its use in the development of its planning standards. The Department also finds that the Company employed a reasonable cost-benefit analysis for developing its design-year and design-day standards as well as complied with our directives regarding design standards outlined in our 1996 Colonial Gas Decision. Accordingly, the Department finds that Colonial's overall planning standards are reviewable, appropriate and reliable.

D. Forecasting Methods

1. Residential, Commercial & Industrial Forecast

a. Description

The Company's current forecast of firm gas-sendout was developed at the customer class level encompassing all rate classes within the residential, commercial and industrial classifications (See Exh. CGC-1, at 32-65). For its demand forecast model, the Company developed an econometric forecast and considered the number of customers and use per customer as variables to be forecasted (id.). Subsequently, Colonial derived the values for total sales through the product of these two forecast values for each rate class (id.). In this estimation, Colonial employed 15 years of monthly time-series data reflecting various demographic as well as economic variables (id. at 36). In developing its demand forecast, the Company used forecasts of independent economic and demographic variables from the New England Economic Project ("NEEP") and the Gas Research Institute ("GRI") (id. at 35). Colonial stated that in developing its current forecast, the Company re-estimated all regression equations previously used in its D.P.U. 96-18 filing, incorporating the two most recent additional years of historical data (id.).

In its current filing, the Company re-tested the statistical outcomes of each of the equations and made refinements to the regression equations as needed (Exh. CGC-1, at 36). Colonial's forecasts of class specific sales were developed separately for the both Cape Cod and Lowell divisions (see id. at 32-65). For the Cape Cod division, Colonial derived a total of nine different forecast figures, one for each rate class (id., at 37 and Tab 4). A similar approach was undertaken for the Lowell Division which has a total of eight rate classes (id.).

Additionally, the Company presented a sensitivity analysis by developing "high" and "low" firm demand scenarios with respect to its "base" case demand forecasts (Exh. CGC-1, at 33). The Company's "high" demand economic scenario models the economy growing faster than in the base forecast, thereby increasing customer demand for gas over the base case during the forecast period (id. at 87). The Company's "low" demand scenario assumes that the economy grows at a rate that is less than the Company's base case forecast (id. at 89). In both scenarios, Massachusetts housing starts, nominal personal income, and inflation in energy prices were the key independent variables to which forecast equations were most sensitive (id. at 87-89). The Company adjusted these independent variables to develop high and low sensitivity cases (id. at 87).

Colonial's forecasting process also included projections regarding sales in non-traditional markets, demand side management ("DSM") savings and sales migration to transportation services (Exh. CGC-1, at 65-68).

b. Analysis and Findings

The Department notes that Colonial appropriately used conventional regression analysis and employed a number of demographic and economic variables in developing its long-range demand forecast model. Therefore, the Department determines that Colonial's approach to demand forecasting is systematic, theoretically well-founded, and in conformance with contemporary estimation techniques. In addition, the Department finds that Colonial's sensitivity analysis, which is based on varying assumptions of macroeconomic developments, provides reliable reference points in the event of various contingencies. Finally, the Department concludes that the statistical summaries of the regression equations of the Company's demand forecast model form a technically solid basis, and support the explanatory power of the model and the accuracy of its projections. For these reasons, the Department finds Colonial's demand forecast model to be reviewable, appropriate and reliable.

2. Transportation Forecasts

a. Description

In our 1996 Colonial Gas Decision, the Department directed Colonial to include in the Company's next filing: (1) an identification of any additional migration to FT service; and, (2) consideration of how any continuing changes in the FT market might affect the Company's future sendout forecasts. In complying with the Department's directive, Colonial performed a survey of nine other local distribution companies ("LDC") that have had some experience with customer migration (Exh. CGC-1, at 76).[(13)] However, the Company notes that there is no certainty concerning the level of transportation migration it would experience once unbundled rates and customer choice are available to all of the Company's customer classes (id. at 70). Indeed, Colonial maintains that there are unresolved factors, including terms and conditions, rate unbundling, capacity disposition and cost responsibility issues, that may significantly affect the rate at which customers choose to migrate to FT service (id. at 72-73). Nevertheless, based upon the survey information and its own transportation migration experience, the Company states that it has attempted to predict the level of transportation migration over the forecast period (id. at 70).

In its analysis of customer migration, Colonial indicates that there are identifiable factors which are likely to affect future customer migration levels in its territory. The first factor identified by the Company is the similar customer composition, which consist predominantly of residential and small commercial customers who are sensitive to the daily and seasonal weather variations typical of New England weather, in both of the Company's two divisions (Exh. CGC-1, at 71). Given this service territory characteristic, Colonial states that resource reliability and customer confidence in the provider are likely

to be prime considerations in deciding whether to change from firm sales to FT service (id.).

A second known factor concerning migration levels stems from the Company's own migration experience. In its current filing, the Company supplied information identifying the migration levels over the 1995-1997 time period (Exh. CGC-1, at 71-72). According to this information, Colonial identified three customers who migrated from firm sales to FT in 1995, eight customers in 1996, and ten customers in 1997 (id. at 72).

Within this framework, Colonial forecasted its transportation migration over the period of the plan. In developing its forecast, Colonial's migration forecast model assumed aggressive customer education and marketer participation within its service territory (Exh. CGC-1, at 79). In addition, because of the sparse and divergent information on residential migration among surveyed companies, the Company chose to focus on information available from Bay State Gas Company's pilot program (id. at 80). The Company's reason for making this choice is twofold: (1) each company's customer base is largely residential; and, (2) both companies are located near the end of the Tennessee and Algonquin interstate pipelines (id.).

A review of Colonial's residential migration forecast shows that the Company expects to experience a five percent residential migration in the first year, which will increase to 20 percent in the second year as customer education programs and marketer efforts become more pronounced (Exh. CGC-1, at 81).[(14)] Thereafter, the Company assumed that the rate of residential customer migration will decrease over the next three years of the forecast period since customers initially receptive to migration are likely to have already elected to migrate by the end of the second year (id.). Accordingly, the Company assumed that the remaining residential customers are likely to be more reluctant to change their existing service without significant additional services (id.). Thus, Colonial predicted an additional ten percent residential migration in each of the remaining three years of the forecast period, resulting in a total residential migration of 50 percent by the final year of the five-year period (id.).

The Company stated that the data for commercial and industrial ("C&I") customers is more complete and, because the customer education process is further advanced in this customer class, this results in migration levels beginning at 20 percent in the first year that are sustained at similar high levels throughout the forecast period (Exh. CGC-1, at 82). The Company predicted that a large majority of its high-load factor C&I customers will migrate to transportation service by the end of the five-year period largely due to the increased savings as compared to low-load factor customers (id.). The Company's expected C&I customer migration rate is 35 percent of the total C&I load in the second year, and 50 percent in the third year (id.). However, Colonial anticipates the migration rates will level off in the fourth and fifth years to a 10 percent migration rate for the last two years of the plan, which results in a total migration rate of 70 percent by the last year of the Company's five-year forecast period (id.). The Company predicts that the cumulative composite migration (e.g., combined residential and C&I migration) rates are

11 percent, 26 percent, 38 percent, 48 percent and 58 percent for the first, second, third, fourth and fifth years, respectively (Exh. CGC-1, at 83).

b. Analysis and Findings

With respect to its transportation migration forecast, Colonial presented a thorough analysis and complied with our directives regarding migration to FT outlined in our 1996 Colonial Gas Decision. The Company's assumptions and models reflect a systematic forecasting approach. The Department notes that the Company's decision to rely upon information from the Bay State Gas Company's residential pilot program is reasonable since that program provides the only available reference point to forecast its residential customer migration to transportation service. For these reasons, the Department finds Colonial's transportation migration forecast to be reviewable, appropriate and reliable.

3. Sensitivity Analysis

a. Description

To ensure that adequate and reliable resources will be available to meet demand in the future, Colonial used a sensitivity analysis to develop forecasts under alternative economic scenarios (Exh. CGC-1, at 86). The Company first determined the sensitivity of its forecast to changes in key economic and demographic variables and computed a range of possible sales forecasts under high and low demand scenarios (id.). Colonial conducted this sensitivity analysis by changing the expected future values of certain key independent variables for the residential heating, G-41 and G-51 customer classes since these classes represent the majority of Colonial's annual firm sendout (id.).

The high demand scenario modeled the economy growing faster than in the base forecast, thereby increasing customer demand for gas over the base case during the forecast period (Exh. CGC-1, at 87). This scenario predicted an inflationary growth outcome (id. at 87-88). Under this scenario, Colonial made the following assumptions: (1) a 1.5 percent increase in housing starts; (2) a 2.0 percent increase in nominal personal income; (3) a 1.0 percent increase in population growth; (4) a 0.6 percent increase in nominal energy prices; and (5) a 0.2 percent change in the consumer price index ("CPI") for each year (Exh. CGC-1, at 88- 89). Based on the sensitivity analysis under this high demand scenario, Colonial expects normal-year firm-sendout to grow by 11 percent throughout the plan period, whereas the number of firm customers is expected to grow by 16 percent (id. at 89).

Under Colonial's low demand scenario, the Company assumed that the economy will grow at a rate that is lower than its base case forecast which will lead to a decrease in inflationary pressure (Exh. CGC-1, at 89-90). With respect to this scenario, Colonial made the following assumptions: (1) a 1.5 percent decrease in housing starts; (2) a 1.0 percent decrease in the nominal personal income; (3) a 2.0 percent decrease in population growth; (4) a 0.8 percent decrease in nominal energy prices; and, (5) a 0.4 percent decrease in CPI for each year (id. at 90-92). As a result of Low demand scenario, the

Company expects normal-year firm sendout to grow by 7.7 percent throughout the plan period, whereas the number of firm customers to grow by ten percent (id. at 93).

b. Analysis and Findings

The Department notes that the Company's sensitivity analysis enhances the reliability of its demand forecast and provides flexibility in building its own supply portfolio. Further, the Department finds that the Company's calculation of ranges for possible demand scenarios contributes to a least-cost planning process by analyzing various contingencies. Accordingly, the Department finds Colonial's sensitivity analysis to be reviewable, appropriate and reliable.

4. Normal- and Design-Year Sendout Forecast

a. Description

The econometric process developed by the Company directly yields the Company's sales forecast (Exh. CGC-1, at 93). Colonial adjusted these sales forecasts for gas used by the Company's facilities and gas that is otherwise not accounted for through metered sales to derive the Company's total sendout requirements (id. at 93-94). The resulting sendout requirements indicate that total firm sendout would increase by 2,069 BBtu (or nine percent) under normal conditions between the years 1998-99 and 2002-03, which translates to an average annual incremental growth rate of 2.2 percent (id. at 96).

The Company then converted its normal-year firm sendout forecast to a sendout forecast for its design-year by splitting its monthly sendout forecasts into daily base-load and heat-sensitive load per degree-day factors (Exh. CGC-1, at 97). Colonial used these factors for scaling the forecast to the Company's design-year and design-day weather scenarios (id.). More precisely, the Company forecasted the number of customers for each month and each customer class in each division (id.). Then, Colonial forecasted average monthly sales per customer which was further broken into base- and heat-sensitive sales (id.). Finally, the Company adjusted normal-year weather sendout to design-year weather sendout by increasing the heat sensitive portion of the sales per customer, as measured in average sales per degree- day per customer, via increases in degree-days (id.). The Company set the weather scaling percent to be equal to the percent increase between the average number of degree-days for the year and the number associated with a design-year standard (id.). As a result, the Company's design-year sendout is projected to increase by 1449 BBtu (or eight percent) between 1998-99 and 2002-03 which corresponds to an average annual incremental growth rate of two percent (Exh. CGC-1, at Tab 1 and 2).

b. Analysis and Findings

The Company appropriately adjusted total sales numbers for Unaccounted-For Gas and Company-Use to obtain its sendout forecast. Colonial also calculated separate forecasts for normal and design conditions based on the planning standards developed in Section

II.C.2. The Department concludes that Colonial's approach in determining normal- and design-year sendout is in accordance with Department precedent. Therefore, the Department finds that the normal- and design-year sendout forecasts are reviewable, reliable and appropriate.

5. Design-Day Sendout Forecast

a. Description

The Company forecasted its design-day sendout in a manner similar to the design-year sendout forecast (Exh. CGC-1, at 98). The Company's design-day sendout forecast yielded a 21,900 MMBtu increase over the planning period which indicates 10.8 percent growth during the same period (id. at Tab 1 and 2).

b. Analysis and Findings

The Company used an analysis for its design-day similar to those for normal- and design-year. Consistent with the analysis and findings provided in Section II.D.4., the Department finds that the Company's design-day sendout forecasts are reviewable, reliable and appropriate.

6. Conclusions on the Sendout Forecast

In its current filing, Colonial provided a detailed and systematic explanation of its sendout forecast with respect to both method and content. The Department notes that Colonial's use of econometric modeling, and related robust statistical test results, render the forecast figures reliable. Also, the Department finds that the Company's use of third-party data sources for forecast values of independent economic and demographic variables is appropriate.

Furthermore, the Company's sendout forecast conveys class-specific sendout requirement information on a divisional basis. In addition, the sensitivity analysis presented by the Company provides for flexibility of Colonial's resources in meeting forecasted sendout requirements in possible contingency situations.

Finally, the Department notes that Colonial estimated its transportation migration forecasts for the planning period by making use of its own past experience along with the experiences of nine Massachusetts and other states' LDCs. The Department is confident that Colonial's class-specific transportation migration forecasts will provide guidance to the Company in a market environment that is currently being restructured toward more customer choice. In addition, the class-specific transportation migration forecasts will be of assistance to the Company in designing its least-cost supply portfolio.

For the reasons indicated above, the Department finds Colonial's sendout forecast to be reviewable, appropriate and reliable. In the future, the Department encourages the Company to prepare its forecast analysis in a manner similar to the current filing.

III. ANALYSIS OF THE SUPPLY PLAN

A. Standard of Review

The Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." See G.L. c. 164, § 69I. In fulfilling this mandate, the Department reviews a gas company's supply planning process and the two major aspects of every utility's supply plan -- adequacy and cost.[(15)] Commonwealth Gas Company, D.P.U. 92-159, at 53; Colonial Gas Company, D.P.U. 93-13, at 49-50; 1992 Boston Gas Decision, 25 DOMSC 116, at 201.

The Department reviews a gas company's five-year supply plan to determine whether the plan is adequate to meet projected normal-year, design-year, design-day, and cold-snap firm sendout requirements.[(16)] In order to establish adequacy, a gas company must demonstrate that it has an identified set of resources which meet its projected sendout under a reasonable range of contingencies. If a company cannot establish that it has an identified set of resources which meet sendout requirements under a reasonable set of contingencies, the company must then demonstrate that it has an action plan which meets projected sendout in the event that the identified resources will not be available when expected. Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 54; Colonial Gas Company, D.P.U. 93-13, at 50.

In its review of a gas company's supply plan, the Department reviews a company's overall supply planning process. An appropriate supply planning process is essential to the development of an adequate, low-cost, and low environmental impact resource plan. Pursuant to this standard, a gas company must establish that its supply planning process enables it to: (1) identify and evaluate a full range of supply options; and (2) compare all options -- including conservation and load management ("C&LM") -- on an equal footing. Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 54; Colonial Gas Company, D.P.U. 93-13, at 51; 1992 Boston Gas Decision, 25 DOMSC 116, at 202.[(17)]

Finally, the Department reviews whether a gas company's five year supply plan minimizes cost. A least-cost supply plan is one that minimizes costs subject to trade-offs with adequacy and environmental impact. Commonwealth Gas Company, D.P.U. 92-159, at 55; Colonial Gas Company, D.P.U. 93-13, at 51-52; 1992 Boston Gas Decision, 25 DOMSC 116, at 203. Here, a gas company must establish that application of its supply planning process has resulted in the addition of resource options that contribute to a least-cost plan.

B. Base Case Supply Plan

In this section, the Department reviews the Company's supply plan and identifies elements which represent potential contingencies affecting the adequacy of supply, or which potentially impact the cost of the supply plan. The Department reviews the

adequacy of the Company's supply plan, the Company's supply planning process, and the cost of the Company's supply plan.

1. Supply-Side Resources

The Company stated that its portfolio of firm pipeline-transported gas supply at the time of its filing consisted of firm agreements with nine different companies (Exh. CGC-1, at 116). The Company indicated that most gas supply contracts feed into either the Texas Eastern-Algonquin system to serve the Company's Cape Cod Division, or into the Tennessee system to serve the Lowell Division (id. at 117). However, the Company indicated that it does have the ability to flow gas from its Alberta-Northeast supply through the Iroquois Pipeline system at a maximum daily quantity of 6,000 MMBtu per day which can then be flowed on a firm basis from the Tennessee Gas Pipeline to the Lowell Division (6,000 MMBtu per day) or into Algonquin's pipeline for delivery to the Cape Cod Division (4,000 MMBtu per day) (id.). In total, the Company retains a current peak-day deliverability of 42,496 MMBtu through the Tennessee pipeline to the Lowell Division; 20,908 MMBtu through the Algonquin pipeline to the Cape Cod Division; 2,000 MMBtu through Iroquois to the Lowell Division; and 4,000 MMBtu through Iroquios to either the Cape Cod or Lowell Division (id. at 119, Table 17).

The Company stated that it also has approximately 50 contracts for transportation and storage services through eight pipeline systems (Exh. CGC-1, at 115). The Company's transportation agreements provide either: (1) transportation for Gulf Coast and Canadian supplies; (2) transportation for storage withdrawal and injection; or (3) allow the Company to meet any balancing and no-notice requirements (id. at 115). The Company stated that its underground storage contracts provide the Company with the ability to optimize its supply portfolio to meet winter season loads, and also to avoid the expense of adding year round long-haul transportation capacity (id. at 116). The Company indicated that it has long-term gas storage contracts with Consolidated Natural Gas, National Fuel and Tennessee (id.). The Company stated that these storage contracts enable Colonial to store approximately 4.7 million MMBtu of gas during the summer season that can be used to meet its winter season needs in quantities of up to 37,000 MMBtu per day (id.).

The Company uses Liquified Natural Gas ("LNG") as its primary supply to meet peak-day requirements (Exh. CGC-1, at 117). The Company has a one-Bcf facility located in Tewksbury, Massachusetts for use in its Lowell Division and a 151,000-Mcf facility in South Yarmouth, Massachusetts to service its Cape Cod Division, as well as satellite facilities located in Westford, Massachusetts and Wareham, Massachusetts (id.). Supply contracts with Distrigas of Massachusetts ("DOMAC") provide for LNG that can be trucked to each of the Company's LNG facilities in quantities of up to 69,600 MMBtu per day for the Lowell Division and 27,000 MMBtu per day for the Cape Cod Division (id. at 119, Table 16). The Company also has a contract with DOMAC for vapor LNG which can be injected into the Company's distribution system[(18)] (id.). As a peaking resource of last resort, Colonial can utilize its propane resources which total 7,000 MMBtu per day for the Lowell Division (id.).

2. Conservation and Load Management

The Company has participated in the Massachusetts Gas Transformation Collaborative since it was established in early 1997 (Exh. CGC-1, at 66-67). This collaborative was created to develop new market transformation initiatives and to phase out the traditional subsidy-based DSM programs (id. at 67). On July 7, 1998 the Company submitted to the Department a Petition For Approval of Colonial's DSM/Market Transformation Program and Budget for the two year period August 1, 1998 through July 31, 2000 ("Petition") (id.). The Petition proposed a program composed of targeted customer education, training for trade allies, field demonstrations, market research, program development and rebates to continue offering, for the next two years, incentives for the installation of certain traditional DSM measures (such as clock thermostats and insulation) for low-income households (id.). Colonial decided to phase out traditional DSM, with the exception of low-income programs, as of May 1, 1998 (id.). The Company's decision to phase out traditional DSM, with the exception of low-income programs, was approved by the Department in a Letter Order issued on May 18, 1998 (id.).

For this filing, the Company relied on its past DSM experience to forecast the estimated DSM savings for the split-year 1998-99 (Exh. CGC-1, at 67). The Company stated that any additional savings from market transformation programs may be offset as past-installed DSM measures complete their useful measure lives (id. at 67-68). As a result, the Company incorporated an estimate of DSM savings over the forecast period equal to the savings level associated with the split-year 1998-99 (id. at 68).

C. Adequacy of the Supply Plan

In reviewing the adequacy of a gas company's five-year supply plan, the Department first examines whether the Company's base-case resource plan is adequate to meet its projected normal-year, design-year, design-day, and cold-snap firm sendout requirements and, if so, whether the Company's plan is adequate to meet its sendout requirements if certain supplies become unavailable. See D.P.U. 93-13, at 62; 1992 Boston Gas Decision at 212-213; 1987 Berkshire Decision at 76. If the supply plan is not adequate under the base-case resource plan, or not adequate under the contingency of existing or new supplies becoming available, then the Company must establish that it has an action plan which will ensure that supplies will be obtained to meet its projected firm sendout requirements. D.P.U. 93-13, at 62; 1992 Boston Gas Decision at 212-213; 1987 Berkshire Decision at 76.

1. Description

Colonial presented supply plans for meeting its forecasted normal-year, design-year, design-day and cold-snap sendout requirements throughout the forecast period. Colonial indicates that its current portfolio is sufficient to meet both the forecasted normal- and design- year demand through the 1999-2000 split year if the forecasted, base-firm-demand growth is realized (Exh. CGC-1, at 120; Tabs 1 and 2). Beyond that time, the Company will need to secure incremental resources for its Cape Cod Division to meet its design-year demand[(19)] (Exh. CGC-1, at 120). The initial volume of this resource is expected to be 2,000 MMBtu per day for 100 heating days in the 2000-01 split year, increasing by an additional 3,000 MMBtu per day to 5,000 MMBtu per day in the 2001-02 split year, and further increasing to 9,000 MMBtu per day in the final year of the forecast (id. at 120-121). The Company is considering three options that would satisfy this incremental requirement:

(1) Increasing its delivery capabilities on the Algonquin Gas Transmission Company's pipeline, including the resources required to deliver the needed gas to Algonquin's system;

(2) Using the Company's LNG facility in South Yarmouth at a higher cycle rate, subject to feasibility, to meet the identified demand; and,

(3) Obtaining a delivered service from a third party capacity holder on the Algonquin system such as DOMAC.

Id. at 121. The Company stated that it intends to continue to evaluate these resource alternatives, and to identify and secure an appropriate resource (id.).

The Company indicated that the incremental amounts that need to be secured to meet design-year requirements will also satisfy the Company's design-day requirements for the remainder of the forecast period (Exh. CGC-1, at 121, Tabs 1 and 2, Tables G-22D and G-23 Cape Cod Division). With regard to the Company's cold-snap analysis, a comparison of the Company's portfolio to the cold-snap conditions shows that the Company's portfolio, as determined through its design-year analysis, can meet the cold-snap requirements in all years of the forecast period (Exh. CGC-1, at 122).

2. Analysis and Findings

As noted previously, the Department has found Colonial's normal-year, design-year, design-day and cold-snap forecast to be reviewable, reliable, and appropriate. Based on Colonial's sendout and supply tables, the Company has demonstrated that it has adequate supplies to meet its forecasted sendout requirements under normal-year, design-year, design-day and cold-snap conditions throughout the forecasted period. Accordingly, the Department finds that Colonial has established that the Company has adequate supplies to meet its normal- year, design-year, design-day, and cold-snap forecasted sendout requirements throughout the forecasted period.

3. Conclusions on the Adequacy of the Supply Plan

The Department finds that the Company has established that its normal-year and design-year supply plans are adequate to meet the Company's forecasted sendout requirements and storage refill requirements throughout the forecast period. The Department also finds that the Company has established that it has adequate supplies to meet the Company's design sendout requirements for the forecast period. Accordingly, the Department finds that the Company has established that it has adequate resources to meet its firm sendout requirements throughout the forecast period.

D. Supply Planning Process

1. Standard of Review

The Department has determined that a supply planning process is critical in enabling a utility company to formulate a resource plan that achieves an adequate, least-cost and low environmental impact supply for its customers. D.P.U. 94-14, at 36; D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 223; 1990 Boston Gas Decision at 388. The Department has noted that an appropriate supply planning process provides a gas company with an organized method of analyzing options, making decisions, and re-evaluating decisions in light of changed circumstances. Id. For the Department to determine that a gas company's supply planning

process is appropriate, the process must be fully documented. D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 223; 1987 Berkshire Gas Decision at 84.

The Department's review of a gas company's process for identifying and evaluating resources focuses on whether the company: (1) has a process for compiling a comprehensive array of resource options -- including pipeline supplies, supplemental supplies, DSM, and other resources; (2) has established appropriate criteria for screening and comparing resources within a particular supply category; (3) has a mechanism in place for comparing all resources, including DSM, on an equal basis, i.e., across resource categories, and (4) has a process that as a whole enables the company to achieve an adequate, least-cost, and low environmental impact supply plan. D.P.U. 94-140, at 37; D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 224; 1990 Boston Gas Decision at 54-55.

As set forth in Section III.A, above, the Department reviews a gas company's five-year supply plan to determine whether it minimizes cost, subject to trade-offs with adequacy and environmental impact. D.P.U. 94-140, at 37; D.P.U. 93-13, at 88; 1992 Boston Gas Decision at 236; 1987 Boston Gas Decision at 214. A gas company must establish that the application of its supply planning process, including adequate consideration of DSM and consideration of all resource options on an equal basis, has resulted in the addition of resource options that contribute to a least-cost supply plan. D.P.U. 94-140, at 37; D.P.U. 93-13, at 83; 1992 Boston Gas Decision at 233; 1986 Berkshire Decision at 115. As part of this review, the Department requires gas companies to show, at a minimum, that they have completed comprehensive cost studies comparing the costs of a reasonable range of practical supply alternatives prior to selection of major new resources for their supply

plans. D.P.U. 94-140, at 37; D.P.U. 93-13, at 89; 1992 Boston Gas Decision at 236; 1986 Gas Generic Order at

100-102.

2. Identification and Evaluation of Resource Options

a. Description

Colonial indicates that it utilizes the SENDOUT resource optimization software to determine the optimal dispatch mix of its resource portfolio (Exh. CGC-1, at 98). The SENDOUT computer model will optimize the Company's resource portfolio given a demand forecast based on physical and contractual constraints (id.). The analysis can be conducted over a single or multi-year period and can be utilized to evaluate the economic impact of replacement or incremental resources and DSM programs quickly and efficiently, providing both volume levels and cost analysis (id., at 99). Accordingly, the model provides the framework for an efficient means to analyze the cost impact of alternative supply sources or combination of sources (id.).

The Company's current approach to resource decision making is a multi-step process implemented in an iterative manner (Exh. CGC-1, at 100). The steps include: (1) identification of need; (2) identification of appropriate range of resources and solicitation of resources; (3) analysis of resource options; and (4) application of decision criteria to make resource selection (id. at 100-114).

i. Identification of Need

Through the use of the SENDOUT model for a term of one or more years into the future, the Company can forecast when its portfolio will require modifications of supplies to meet customer requirements (Exh. DTE 1-2). The need to increase or decrease resources arises when capacity of the Company's resource portfolio is not substantially equivalent to its firm demand requirements (Exh. CGC-1, at 101).

ii. Identification of Appropriate Range of Resources and Solicitation of Alternatives

When an additional resource requirement is projected, the Company has an established process for compiling a comprehensive array of resource options that may meet that forecast need (Exh. CGC-1, at 102; Exh. DTE 1-22). The Company gathers information with respect to gas resource supply options through direct contact with pipelines and suppliers, by active involvement in Federal Energy Regulatory Commission proceedings, through participation as a member in gas associations, and through meetings with various customer groups (Exh. DTE 1-22). Through these comprehensive information gathering activities, the Company maintains sufficient knowledge to identify resource options that

might meet the anticipated demand (id.). Using this base of information, the Company is able to develop a list of potential service providers to whom Requests for Proposals ("RFPs") will be sent (Exh. CGC-1, at 103). The responses to an RFP establish the set of potential resource options available to meet a particular need at a given point in time (id.). The Company then performs a preliminary review to narrow the set to an appropriate range for further analysis (id.).

iii. Analysis of Resource Options

According to Colonial, cost is the most-readily quantifiable criteria that the Company applies in evaluating resource options. The goal of the cost analysis is to determine, for each resource option in question, the impact on the Company's total portfolio cost over the planning time period (Exh. CGC-1, at 103). The Company employs its dispatch model to determine the total cost of each resource option. By performing the analysis for each resource option, the Company is able to rank each resource option on a total cost basis (id. at 104).

To supplement its cost analysis, the Company's resource decisions rely on a number of non-price factors, including reliability, diversity and flexibility (Exh. CGC-1, at 104). Although the value of these non-price criteria is not easily quantified relative to cost factors, they are assigned relative weights for comparative purposes (id.).

iv. Application of Decision Criteria

The Company uses a matrix analysis to evaluate a potential pipeline supply resource based on five weighted categories: (1) financial stability (20 percent weight); (2) supply integrity and reliability (25 percent weight); (3) operating flexibility (25 percent weight); (4) cost competitiveness (20 percent weight); and (5) miscellaneous (10 percent) (Exh. DTE 1-8). Using a matrix that contains each of these criteria, each supplier is compared with one another and assigned a score number for each of the five weighted categories based on a scale that ranges from one to five (five being the highest score) (id.). Each score is then weighted by the percentages described above, and a weighted score is calculated (id.). Scores for each of the five weighted categories are then added together for each potential vendor to derive a total rating for each proposal (id.). Colonial indicates that the matrix process for evaluating supply options was previously approved by the Department (see 1996 Colonial Gas Company, at 52). Through the use of the Company's matrix analysis, the Company's assessment of reliability, diversity and flexibility, together with other relevant price and non-price criteria, results in the selection of the lowest cost resources that provide the greatest price and non-price benefits for its customers (Exh. DTE 1-8). b. Analysis and Findings

The Department has previously endorsed LDC acquisition processes that have involved the solicitation of competitive bids from alternative suppliers. See Colonial Gas Company, D.P.U.96-48, at 49 (1996); Holyoke Gas and Electric Department, D.P.U. 93-191, at 30 (1996); Blackstone Gas Company, D.P.U. 95-15, at 7 (1996); Fall River Gas Company, D.P.U. 94-38, at 10 (1995). The Department determines that the RFP process

employed by Colonial to identify alternative suppliers is appropriate. Colonial has utilized price and non-price criteria to determine which options to pursue and has considered both short-term and long-term options. Further, Colonial's process for evaluating supply options was reviewed by the Department in earlier decisions involving gas supply contracts (See 1996 Colonial Gas Decision; Colonial Gas Company, D.P.U. 93-13 (1995). Accordingly, the Department finds that Colonial has developed appropriate criteria for screening and comparing resource options.

3. Management of Supply Initiatives

a. Description

In order to meet its firm commitments in a least-cost manner while maintaining reliability, flexibility and diversity, the Company takes a pro-active approach to managing its resource portfolio (Exh. CGC-1, at 107). The Company points out that it has modified its portfolio strategy in recent years to create maximum opportunities for flexibility while maintaining service reliability at the lowest possible cost (id.).

i. Contract Restructuring

The Company has increased its portfolio flexibility by: (1) having a larger percentage of its firm supply contracts with a term of one year or less; and, (2) negotiating load-loss provisions to provide the flexibility for customers to move quickly into a "choice" environment (Exh. CGC-1, at 109). The Company now enters into supply contracts that range from five months to one year (id.). The Company's shorter-term supply contracts continue to offer the same level of reliability, diversity and cost benefits associated with the Company's previous longer-term contracts (id. at 110). At the same time, however, such shorter-term contracts allow the Company to maximize the level of flexibility it has over future supply obligations (id.).

ii. Portfolio Management Alliances

In 1997, the Company contracted with MidCon Gas Services Corporation ("MidCon") to manage 55 of Colonial's 61 contracts of gas supplies, interstate pipeline transportation and off-system storage resources (Exh. CGC-1, at 111). The Company's use of MidCon's wholesale gas supply and interstate capacity expertise was intended to increase its ability to capture the full value of any temporarily available capacity resources in the secondary market (id.). In turn, the Company returned substantial savings to its firm customers without affecting the reliability of service (id.).

In the summer of 1999, the Company issued a RFP for a similar arrangement that would manage the combined portfolios of Colonial, Essex Gas Company and Boston Gas Company (Tr. at 60). On October 18, 1999, the Department issued its decision regarding that RFP and approved the proposed portfolio management contract. Petition of Boston Gas, Colonial Gas and Essex Gas Company for Approval of a Gas Resource Portfolio Management Contract, D.T.E. 99-76 (1999).

iii. Capacity Release and Sales for Resale

Colonial indicates that it has actively participated in the capacity release of temporarily available capacity on a short-term basis that is not otherwise required to meet the needs of its firm customers (Exh. CGC-1, at 114). The Company's mitigation efforts in the capacity release market have provided savings of $17.1 million since the implementation of Order No. 636 through the end of 1998 (Exh. CGC-1, at 114; RR-DTE-3). During that same period, the Company has also generated almost $.7 million in off-system sales and approximately $7.3 million in interruptible sales and transportation (Exh. CGC-1, at 114; Exh. RR-DTE-3).

b. Analysis and Findings

The record shows that Colonial has established a planning process and has instituted various management initiatives that help to minimize cost while maintaining reliability, flexibility, and security of supply. The Department finds that: (1) Colonial has formulated appropriate initiatives to reduce costs to the customers; and (2) Colonial has reduced costs in ways that do not compromise reliability and/or security of supply. Accordingly, the Department finds the above supply-related initiatives to be prudent and consistent with the goal of minimizing costs to customers.

IV. CONCLUSIONS

The Department hereby approves the 1998-2003 forecast and supply plan of Colonial Gas Company. In so deciding, the Department has detailed specific information that Colonial must provide in its next filing in order for the Department to approve that filing. This information is necessary for the Department to fulfill its statutory mandate. Therefore, in order for the Department to approve Colonial's next forecast and supply plan filing, the Company must:

Provide comprehensive cost-benefit evaluations to justify the appropriateness of its selected design-day standard in light of the changes in the gas industry due to restructuring.[(20)]

V. ORDER

Accordingly, after due notice, hearing and consideration, it is

ORDERED: That Colonial Gas Company's petition for approval of its long-range sendout forecast and supply plan be and hereby is APPROVED; and it is

FURTHER ORDERED: That Colonial Gas Company comply with all the directives contained herein prior to filing its next long-range forecast and supply plan; and it is

FURTHER ORDERED: That Colonial Gas Company shall file its next long-range forecast and supply plan with the Department in the Fourth Quarter 2001.

By Order of the Department,

James Connelly, Chairman

W. Robert Keating, Commissioner

Paul B. Vasington, Commissioner

Eugene J. Sullivan, Jr., Commissioner

Deirdre K. Manning, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such time as the Commission may allow upon request filed prior to the expiration of twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).

1. Pursuant to Chapter 141 of the Acts of 1992 ("Reorganization Act"), the Energy Facilities Siting Council ("Siting Council") was merged with the Department, and an Energy Facilities Siting Board ("Siting Board") was created within the Department, effective September 1, 1992. Reorganization Act, § 55. As a result of the merger, the Department was given jurisdiction to review utility forecast and supply plans, a function previously performed by the Siting Council. G.L. c. 164, § 69I. The terms Siting Council and Siting Board will be used in this decision as appropriate to the circumstances being discussed.

2. The Energy Facilities Siting Council defined a split year as November 1 through October 31. The heating season is defined as November 1 through March 31, and the non-heating season is defined as April 1 through October 31. Energy Facilities Siting Council Administrative Bulletin 86-1, at 5.

3. On July 15, 1999, the Department approved the acquisition of Colonial Gas Company by Eastern Enterprises, parent company to Boston Gas Company and Essex Gas Company. See Eastern-Colonial Merger, D.T.E. 98-128 (1999). Colonial, however, filed this Forecast and Supply Plan prior to the petition for approval of the merger. Therefore, our review of Colonial's Forecast and Supply plan is based on the information available at the time of this filing. We note, however, that we expect Boston Gas, Colonial Gas and Essex Gas to file a joint Forecast and Supply Plan that reflects the combined planning of the three companies. Moreover, we note that the Attorney General's Office has appealed the Department's approval of the merger to the Supreme Judicial Court. See Docket No. SJ-1999-0384.

4. A cold-snap is a prolonged series of days at or near design conditions. D.P.U. 93-13, at 66; 1992 Boston Gas Decision at 217; Commonwealth Gas, 17 DOMSC 71, at 137 (1998) ("1998 Commonwealth Gas Decision"). The purpose of a cold-snap analysis is to test the ability of the Company's resource portfolio to respond to prolonged extreme conditions (Exh. CGC-1, at 121).

5. A normal year is defined as the demand profile associated with the average or typical temperature level that can be expected over the course of a year (Exh. CGC-1, at 19).

6. A design day represents the coldest day for which a company plans to provide service. Colonial indicates that, because the design day reflects the Company's single highest EDD or DD day of the year, the Company must have sufficient firm resources in place to serve its firm customer gas loads without relying on the uncertainties of the short-term non-firm market during periods of severe winter weather (Exh. CGC-1, at 31).

7. A shortfall occurs when demand for gas is higher than the maximum available supply. In the event of a shortfall, voluntary curtailment and interruption of gas service to commercial, industrial and/or residential customers are possible remedies (Exh. CGC-1, 24). The Company, however, notes that it would attempt to confine supply interruption to commercial and industrial customers (id.).

8. "Gas supply" and "gas resources" are used interchangeably.

9. Since interruption of residential customers would be unlikely, the Company indicates that the analysis of lost production multipliers was limited to commercial and industrial customers (id. at 24-25).

10. Ideally, a cost-benefit approach would include the cost incurred by the Company to acquire additional capacity versus the benefit of not being held liable for a customer's lost revenue in the event of a shortfall. The Company's analysis reviewed the damages that

would occur in the event of a shortfall, however, the Company was not able to state whether Colonial would be held liable by the customers for lost revenue in case of a shortfall (Tr. at 11).

11. A design year represents the coldest year for which a company plans to provide service.

12. SENDOUT is a resource optimization software package designed to optimize the utilization of the Company's resource portfolio (Exh. CGC-1, at 98). The SENDOUT model is discussed further at Section III.D.2, below.

13. The survey included Boston Gas Company and Bay State Gas Company from Massachusetts; Brooklyn Union Gas Company from New York; Columbia Gas of Ohio and East Ohio Gas from Ohio; Providence Gas Company from Rhode Island; Public Service Electric and Gas and New Jersey Natural from New Jersey; and Washington Gas from Maryland.

14. The Company assumes that residential customer choice would not occur until April 1, 1999, or six months into the first split-year of the forecast period (Exh. CGC-1, at 80).

15. G.L. c.164, § 69I also directs the Department to balance cost considerations with environmental impacts to ensure that the Commonwealth has a necessary supply of energy. Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 53; Colonial Gas Company, D.P.U. 93-13, at 50.

16. The Department's review of reliability, another necessary element of a gas company's supply plan, is included within the Department's consideration of adequacy. See Colonial Gas Company, D.P.U. 93-13, at 50, n.22; 1992 Boston Gas Decision, 25 DOMSC 116, at 201 n.87; Boston Gas Company, 16 DOMSC 173, at 214 (1987).

17. G.L. c. 164, § 69I requires a utility company to demonstrate that its long-range forecast "include[s] an adequate consideration of conservation and load management." Initially, the Siting Council reviewed gas C&LM efforts in terms of cost minimization issues. The Siting Council expanded its review to require a gas company to demonstrate that it has reasonably considered C&LM programs as resource options to help ensure that it has adequate supplies to meet projected sendout requirements. See Commonwealth Gas, 17 DOMSC at 122-126 (1998).

18. Colonial states that 5,000 MMBtu per day can be injected into the Cape Cod Division, and an additional 7,000 MMBtu per day which can be injected into either division.

19. Colonial has investigated the possibility of constructing a new LNG facility on Cape Cod (See Exh. CGC-1, at 123-124; RR-DTE-1). The Company has provided an extensive analysis indicating that the construction of a small LNG facility located in the lower Cape

Cod is superior to other alternatives in meeting the Company's identified need at least cost and minimum environmental impacts (RR-DTE-1).

20. As noted previously, Colonial has been acquired by Eastern Enterprises, parent company to Essex Gas Company and Boston Gas Company, and Colonial's next forecast and supply plan should be a plan combined with Essex Gas and Boston Gas. We expect the combined plan to incorporate this directive.